



The EcoPro[®] Series

An Ecological Protection solution capability for medical, e-wastes, industrial sludge and other hazardous waste materials

Allied Plasma, along with its' strategic partners and business allies, have advanced two mobile plasma gasification systems for the remediation of solid and liquid hazardous waste materials.



Plasma Gasification

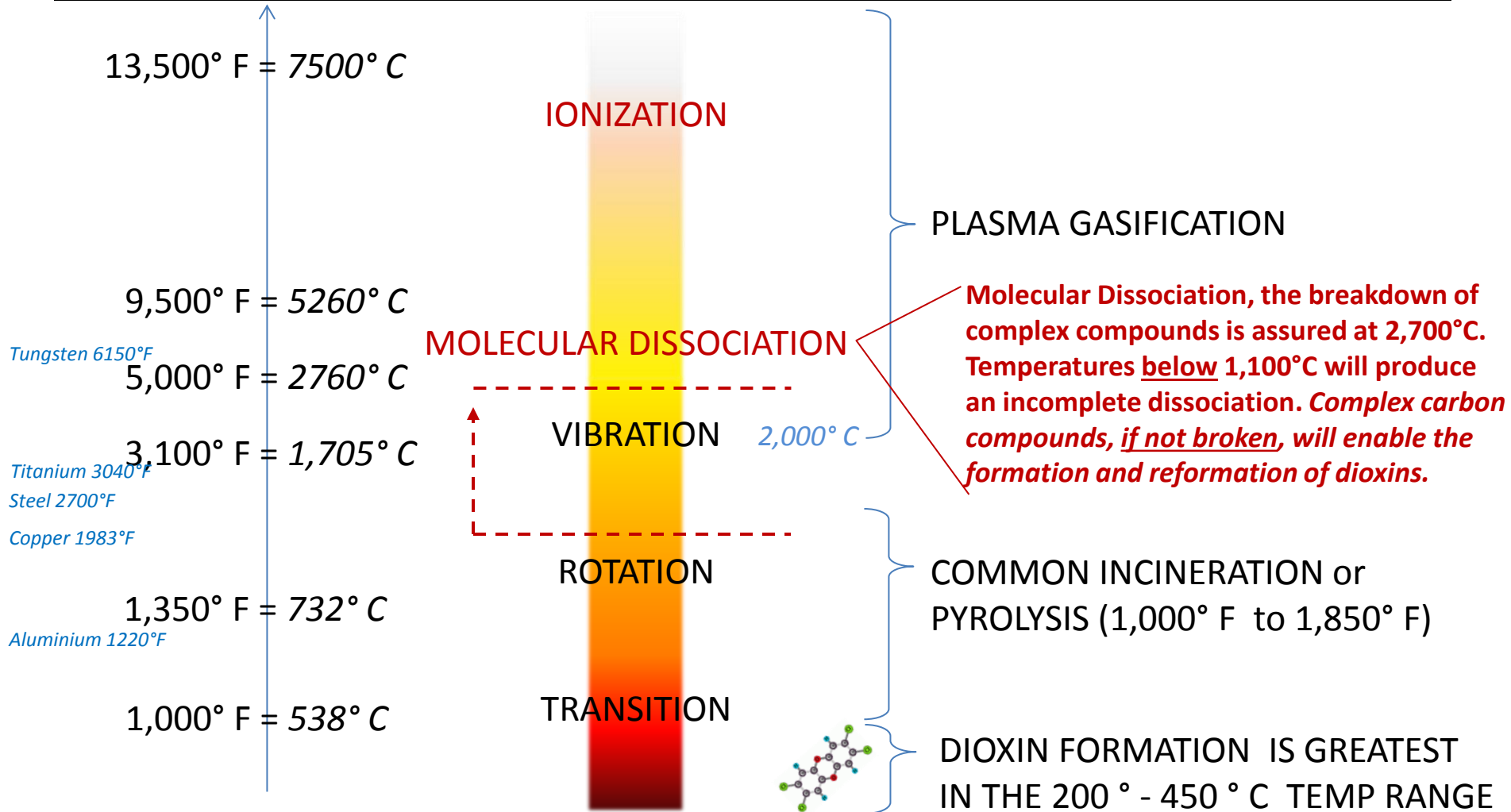
for processing wastes

- Plasma Gasification is a thermo-chemical conversion process.
 - Organic solids and liquids, including complex hydrocarbon compounds, are converted to a synthesis gas (syngas) of Carbon, Hydrogen, & Nitrogen.
 - Syngas is a moderate BTU fuel similar to methane.
 - Inorganic materials, such as metals and minerals, are melted, and fully recoverable in what the industry refers to as 'slag'.
 - Metals are recovered/recycled.
 - Silica based minerals, will be in a vitrified or obsidian-like form suitable for many industrial uses.
- Plasma Gasification is the most versatile remediation method for virtually all hazardous materials.
 - Carcinogenic PCBs, dioxins and furans are positively destroyed, and cannot reform as in common incineration or pyrolysis methods.



Plasma Gasification

a thermo-chemical reactive environment





The EcoPro[®] I Mobile Plasma Gasification System

- Allied Plasma's proprietary mobile plasma gasification system designed to be operated by a crew of three trained technicians.
- Designed to function within the footprint of two 40' ISO* HC containers.
 - A complete ISO containerized system is transportable in a single military transport or equivalent civilian heavy lift aircraft.
 - ISO containers are also readily shipped by rail, surface ship or flat bed semi-trailers.
- The mobility of the design supports rapid deployment to a hazardous material (hazmat) generating location or in response to a national or natural disaster site.
- For high BTU content waste generators, such as oil shale development sites or military forward operating bases (FOBs), the EcoPro[®] system can provide excess electrical power up to 240kwh.

****ISO Container configuration is planned to be in one 40' ISO HC container and two 20' ISO containers that would house the control room and diesel generator set separately. The shipping configuration (air, rail, barge, truck) will fit the footprint, weight and volume of two 40' ISO containers.***



EcoPro[®] I

Five Focused Feedstocks

- The EcoPro[®] I baseline system is designed for these five primary hazardous waste or problematic waste generators:
 - Medical & Pharmaceutical hazardous and nonhazardous wastes
 - Industrial & Commercial hazardous and nonhazardous wastes
 - Military Forward Operations Base (FOB) waste
 - Remote oil drilling and shale development camps have similar wastes
 - Disaster generated, hazardous and nonhazardous wastes
 - Electronics waste (e-waste)
- System training addresses the various operational and maintenance issues related to the different feedstock types.
 - Allied Plasma can modify the EcoPro[®] I baseline system design to support specific customer requirements and feedstock types



The EcoPro[®] II Liquid Mobile Plasma Gasification System

- Allied Plasma's *second* in the series of proprietary mobile plasma gasification systems.
- The EcoPro II is designed to process liquid-only hazardous materials, including contaminated oil wastes, oil well fracking fluids and other high hazardous wastes including chemical weapon-fill solutions.
- The EcoPro II Liquid handling system is simpler than the reducing shredder components of the EcoPro I system, and will process a higher rate of wastes by weight per day.
- The mobility is consistent with the EcoPro I and also supports rapid deployment to a hazardous material (hazmat) generating location or in response to a national or natural disaster site.
- Like the EcoPro I, the EcoPro II can be regionally sited to limit transportation needs and can provide assurance that the hazmat wastes have been fully remediated in a timely and environmentally responsible manner.
 - The difficulties of handling, storing, packaging and transporting liquid hazmat is significantly more costly and dangerous than solid waste hazmat.
 - Accidental spills of liquid hazmat affects water resources, air quality and soils far quicker than most solid hazmat wastes.



EcoPro[®] Series

Allied Plasma Business Models

- Company owned assets in regional US locations.
 - Regional manager reports to and works directly for the parent company (Allied Plasma, Inc.)
 - Each US location is a likely separate cost center.
 - May be tasked by the parent company to provide EcoPro[®] systems and personnel to respond to a national disaster, or to support a parent company customer.
- Direct customer sales and service packages.
 - Initial and recurring training for operations, safety & routine maintenance.
 - 18 month recurring parts package.
- System lease and service packages.
 - Initial and recurring training for operations, safety & routine maintenance.
 - 18 month recurring parts package.
- The USA-Brazil strategic partner company 'Allied Plasma do Brasil' will provide a similar business case structure.



Strategic Partners & Business Allies



Allied Plasma Inc.
Reno – Nevada - USA

Allied Plasma do Brasil
Londrina – Paraná - Brasil

- **Hood EIC, Inc.**
Sparks, Nevada, USA
- **Jumbo Industria Mechanical**
Assai, Paraná, Brazil
- **Leading Edge Plasma, Inc.**
Calgary, Alberta, Canada
- **Epsilon Systems Solutions, Inc.**
San Diego, California, USA
- **Nevada Venture Accelerator**
Reno, Nevada, USA
- **Internet Marketing Media**
Oceanside, California, USA
- **Design Star Media**
Oceanside, California, USA
- **Logical Systems Inc.**
Bartlett, Tennessee, USA
- **Phoenix Solutions Co.**
Minneapolis, Minnesota, USA
- **Industrial Ceramic Solutions, LLC**
Oak Ridge, Tennessee, USA
- **American Pulverizer, Inc.**
St. Louis, Missouri, USA
- **Pinnacle Ozone, Inc.**
Cocoa Beach, Florida, USA



Contact

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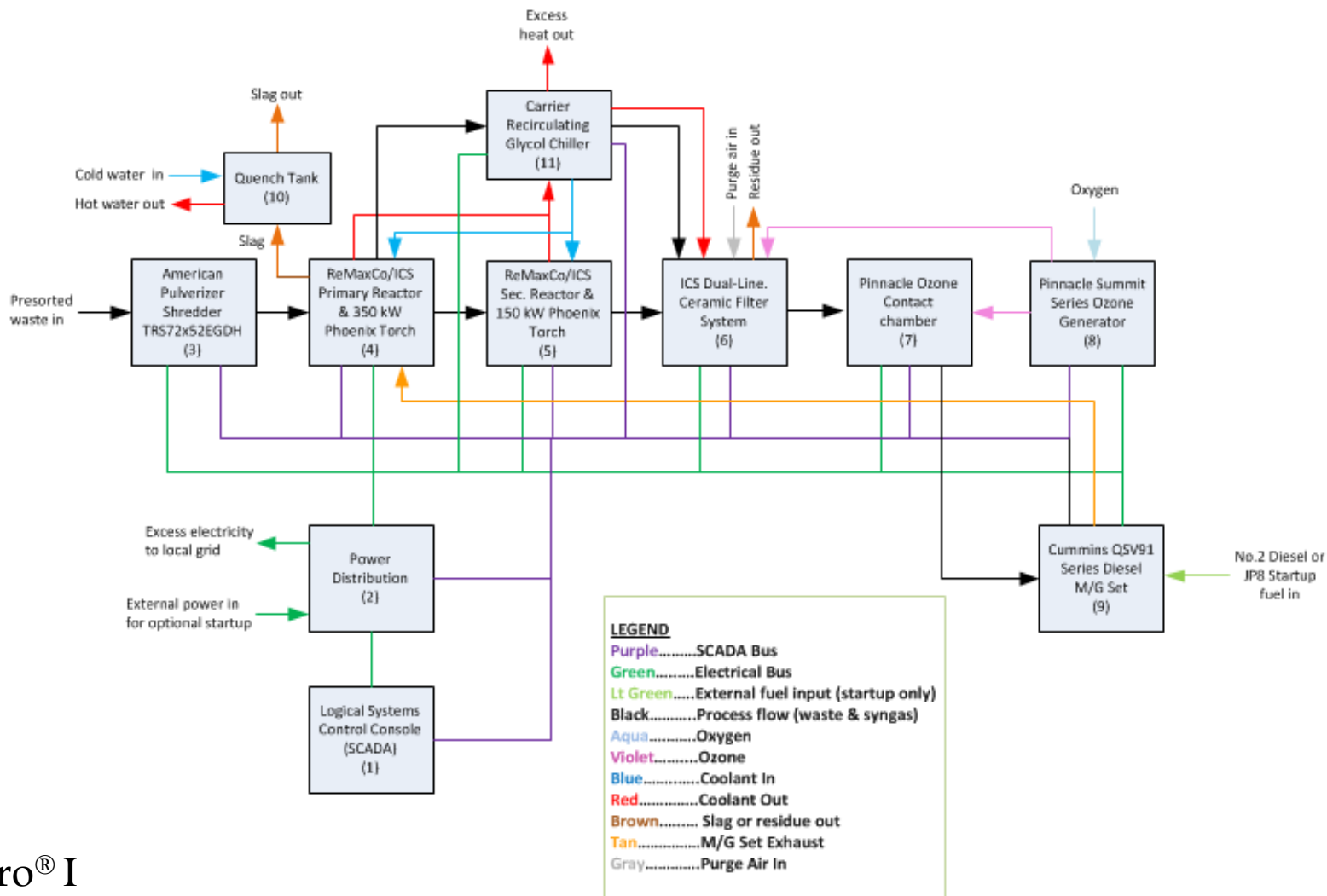
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“The world always seems brighter when you’ve just made something that wasn’t there before.” — Neil Gaiman



EcoPro® I

ALLIED PLASMA RENO DESIGN PROTOTYPE UNIT (DPU) FLOW DIAGRAM

NOTE: for simplicity, valves, switches, and small ancillary components are not shown.

Dwg. 1 Rev. 13 A. Tompkins

Proprietary to Allied Plasma Inc.



Quench Tank
(10)
Slag level
Coolant level
Fresh water in

Dual Carrier
Recirculating
Glycol Chiller
(11)
On/off control
Heat flow rate in
Heat temp in
Heat temp out
Heat bypass control
Syngas temp in
Syngas temp out
Syngas bypass control

American
Pulverizer
Shredder
TR572x52EGDH
(3)

Weight
Moisture
Feed rate
Input voltage
Input current

ReMaxCo/ICS
Primary Reactor
& 350 kW
Phoenix Torch
(4)

Reactor temp
Reactor pressure
Syngas temp out
Syngas analysis
Syngas flow rate
Input voltage
Input current
Bypass control
Reactor start/stop
Slag level
Slag outlet

ReMaxCo/ICS
Sec. Reactor &
150 kW Phoenix
Torch
(5)

Reactor temp
Reactor pressure
Syngas temp in
Syngas temp out
Syngas analysis
Syngas flow rate
Input voltage
Input current
Bypass control
Reactor start/stop
Slag level
Slag outlet

ICS Dual-Line.
Ceramic Filter
System
(6)

Filter temp
Syngas in line pressure
Syngas out line pressure
Syngas temp in
Syngas temp out
Syngas analysis out
Syngas flow rate out
Direct output control
Syngas direction control
Residue out control
Heat in control
Heat in temp
Ozone in control
Purge air in control

Pinnacle Ozone
Contact
chamber
(7)

Chamber temp
Chamber pressure
Ozone flow rate in
Syngas temp in
Syngas temp out
Syngas flow rate out
Syngas analysis
Bypass control
Direct output control

Pinnacle Summit
Series Ozone
Generator
(8)

Ozone flow rate out
Ozone CC bypass
Ozone volume
Ozone pressure
Ozone temp
Input voltage
Input current
On/off control

Input voltage
Input current
Output voltage
Output current
System security

Power
Distribution
(2)

Logical Systems
(SCADA)
Console
(1)

All data points in
All control points in
All control points out
All control & data points alarmed
Aux control input/output for laptop
All points emergency shutdown
System security

Cummins QSV91
Series Diesel
M/G Set
(9)

Start/stop control
Syngas flow rate in
Syngas temp
Motor coolant temp
Motor RPM
Motor oil temp
Motor exhaust gas temp
Motor exhaust direction control
Motor fuel flow rate
Motor coolant level
Gen output voltage
Gen output current

EcoPro® I

ALLIED PLASMA RENO DESIGN PROTOTYPE UNIT PLC DATA POINTS

Dwg. 3 Rev. 4 — 1/22/2013 — A. Tompkins

Proprietary to Allied Plasma Inc.

